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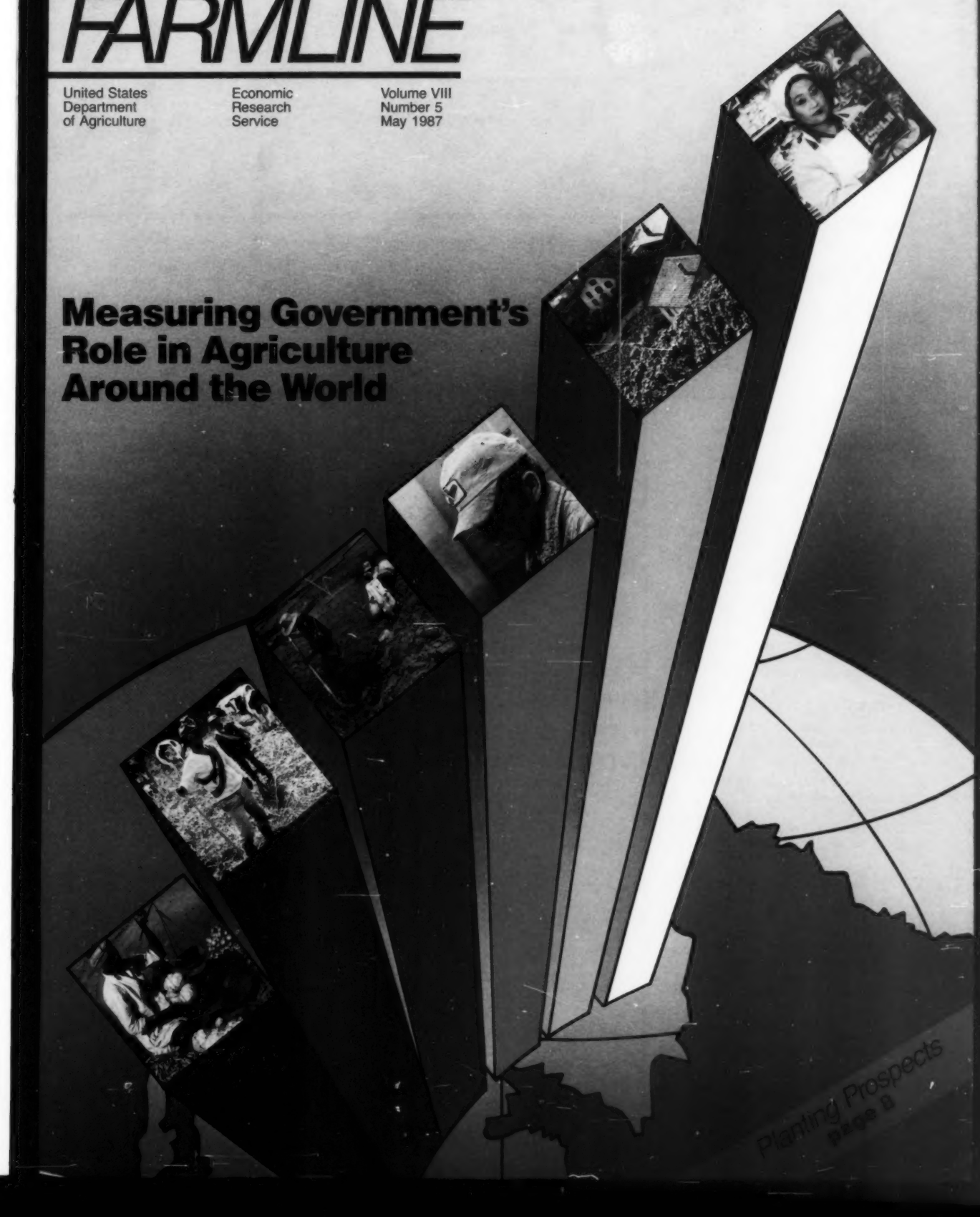
Measuring Government's Role in Agriculture Around the World



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TAKE PRIDE IN AMERICA

FARMLINE

AGRICULTURE . . . NATURAL RESOURCES . . . RURAL DEVELOPMENT
Practical economic intelligence from USDA's Economic Research Service

Editor
Eric Van Chantfort

Assistant Editor
Doug Martinez

Editorial Assistant
Martha R. Evans

(202) 786-1494

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Agriculture is protected, subsidized, taxed, and fettered by governments around the world, yet any global effort to reduce "government intervention" faces an immediate obstacle. How are levels of support to be measured and compared among nations? In this article, analysts propose a measuring tool, and they apply it to government farm policies in the United States and several other trading nations.

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Lower, more competitive prices are a key part of the 1985 farm bill strategy for reviving U.S. agricultural exports. The issue, though, is not whether demand will increase. The important questions are really "how much?" and "how soon?" The answers, despite numerous studies, seem to be elusive.

Why the Cattle Cycle Went Awry *by Juliana King* 10

Cattle cycles had been nearly as regular as the passing of the decades—until the eighth cycle came along in 1967. Since then, the industry has been unable to sustain the cyclical increases that analysts had come to expect. Economist Ron Gustafson explains how the cattle cycle got off track, where cattle numbers seem to be heading now, and why a return to a "normal" cycle is unlikely before the mid-1990's.

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Measuring Government's Role in Agriculture Around the World

What do Japanese rice growers, Australian dairy producers, and U.S. grain farmers have in common?

They all share in the farm subsidies and supports provided by their governments to raise farm income and stabilize prices—and they increasingly share in the growing world debate over government's role in agriculture.

Certainly, propping up prices for producers—or cutting food costs for consumers—are common practices by governments.

But these actions also affect trade among nations, as well as production, consumption, and prices within nations, say analysts of USDA's Economic Research Service. Among the consequences: serious imbalances in world supply and demand, curtailed world trade opportunities, depressed world commodity prices, and higher bills for taxpayers and consumers as farm support costs are passed on through higher taxes, higher food prices, or both.

Yet any global effort to reduce what many researchers call "government intervention" in agriculture faces an immediate obstacle. Given the different ways in which governments intervene—from acreage controls, direct payments, and trade barriers to tax breaks, research and development assistance, and input subsidies—how are levels of support to be measured and compared among nations?

The answer is to provide a common standard of measurement which major trading nations can accept, says ERS economist Nicole Ballenger. And that is exactly what she and her colleagues have attemped to do.

Measuring Government's Role

The measures used are based on two concepts labeled *producer subsidy equivalents (PSE's)* and *consumer subsidy equivalents (CSE's)*. PSE's weigh the many different ways in which governments provide assistance to producers. The PSE becomes a negative subsidy—a tax—in cases where government policies artificially hold farm prices below world market levels, restrain exports to ensure adequate domestic supplies, or shift income from agriculture to other sectors of the economy.

. . . Any global effort to reduce what many researchers call "government intervention" in agriculture faces an immediate obstacle.

Similarly, CSE's weigh the different ways in which government programs affect consumers, either positively by artificially holding down food prices, or negatively through agricultural policies (import restrictions, for example) that raise retail food prices above prevailing world market levels.

"The extent of government intervention was determined by calculating the levels of subsidies (PSE's and CSE's) which would be required to compensate producers and consumers for removing the government programs," says Ballenger.

The PSE's and CSE's are reported as ratios or percentages. A PSE of 25 percent, for instance, means that the value of the governmental assistance to producers was found to equal one-fourth of producers' cash receipts from agriculture (including direct government payments). The heavier the subsidy, the higher the percentage.

For More Information . . .

If you'd like more information on the role of various governments in agriculture, the ERS report ***Government Intervention in Agriculture*** *is now available from the U.S. Government Printing Office. Ask for it by title, specify Stock No. 001-019-00520-3, and include a check or money order for $2.75. Address your order to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. For faster service, call the GPO order desk at (202) 783-3238, and charge your order to a major credit card.*

ERS analysts studied government's role in the agricultural sectors of 15 market-oriented nations that were most active in world trade, either as exporters or importers, from 1982 to 1984. In addition to the European Community (EC), which is treated as a single entity, the industrialized countries examined were the United States, Australia, Canada, Japan, and New Zealand. The less developed countries studied were South Korea, Taiwan, India, Nigeria, Mexico, Brazil, Argentina, South Africa, and Sudan.

Ranking the Intervention

What these indicators show is that Japan helps its agriculture the most among the nations studied.

During 1982-84, the Japanese government provided producer subsidy equivalents of 75 percent or more for dairy products, rice, wheat, and barley, according to ERS analysts. Beef, soybeans, pork, and sugar had a PSE of 50 to 74 percent.

A pair of Pacific Rim nations—South Korea and Taiwan—were the next most supportive of particular farm products. South Korea had seven commodities, including rice and fluid milk, in the 50 percent or above category of PSE's. Taiwan had two products—wheat and sorghum—at this same level of support.

The EC was next. It had only one commodity—beef—in the 50-percent-plus range, but eight commodities were in the 25 to 49 percent range.

The United States followed with six commodities in the 25 to 49 percent range, and one—sugar—above 50 percent.

Using weighted averages, ERS analysts ranked the six industrialized powers in their study. By this measure, Japan had the highest average PSE, 72 percent. It was followed by the EC at 33 percent, New Zealand at 23 percent, the United States and Canada tied at 22 percent, and Australia at 9 percent.

A broader pattern, perhaps, exists in another measurement—whether a nation's consumers or producers are most often helped by government intervention.

"Our findings show a tendency for less developed nations to assist consumers, and for industrialized nations to assist producers," says Ballenger.

Many governments in less developed nations are apparently trying to maintain the support of the population by keeping food prices down, and they are often willing to do this at the expense of their farmers. Moreover, producer taxes—or negative PSE's—may be a way of raising government revenues. The industrialized nations, in contrast, are more likely to protect their agriculture and pass the costs on to consumers or taxpayers.

In the EC and Japan, she notes, "consumers bore most of the cost of their governments' support to producers of all commodities except oilseeds. U.S., Canadian, and Australian consumers carried the cost of their governments' support to dairy producers. On the other hand, assistance to U.S. and Canadian producers of grains came largely from government budget contributions. In countries such as India and Argentina, we often found that government intervention in agriculture resulted in consumer subsidies."

There are other observations that emerge from the ERS research, including commodity patterns.

"Government assistance to food grain, dairy product, and sugar producers tends to be higher than assistance to other producers," Ballenger says.

Overall, she notes that the producer subsidy equivalents reveal an extensive government role in agriculture around the world, ranging from heavy taxation to heavy subsidization of producers.

What the measures don't yet tell us, she adds, is how the trade and other effects differ—even with the same PSE—because of different policy mixes or different producer responses to policy changes.

"PSE's and CSE's alone don't fully reveal the effects of government involvement on agricultural production, consumption, trade flows, or prices," she explains. "For example, a fertilizer subsidy and an import quota might have the same PSE if the budget outlay for the fertilizer subsidy equals the estimated value to producers of the import quota. However, the import quota would probably have a greater impact on trade than the fertilizer subsidy."

Whatever their current limitations, "the producer and consumer subsidy equivalents are important because they condense the array of government policies affecting agriculture into summary measures that can be

Government Intervention in Agriculture Ranges From High Producer Subsidies in Japan to the Taxation of Farmers in Argentina.

	Producer subsidy equivalents			
	50% or more	25% - 49%	0 - 24%	Producer tax
United States	Sugar	Sorghum, corn, wheat, dairy, cotton, rice	Soybeans, pork, poultry, beef, barley	
Australia		Fluid milk	Wheat, barley, beef, cotton, sheep meat, wool, rice, cane sugar, pork, poultry, manu. milk	
Canada	Dairy	Sugar	Corn, oats, soybeans, beef, pork, flaxseed, wheat, rapeseed, poultry, barley, rye	
European Community	Beef	Durum wheat, dairy, sheep meat, rapeseed, soybeans, rice, poultry, sugar	Corn, common wheat, pork, barley	
Japan	Beef, soybeans, pork, sugar, dairy, rice, wheat, barley	Poultry		
South Korea	Rice, wheat, corn, barley, soybeans, beef, fluid milk	Pork	Poultry	
Taiwan	Wheat, sorghum	Rice, beef, poultry, dairy, tobacco	Pork, corn, soybeans, sugar	
India		Soy oil, peanut oil, rape oil	Rapeseed, peanuts	Wheat, cotton, rice, peanut meal, rapeseed meal, soybeans, soymeal
Nigeria		Wheat	Corn	Cocoa, sugar, rice, cotton
Mexico	Corn	Soybeans, wheat, sorghum	Cotton	
Brazil	Wheat	Cotton, rice	Poultry, dairy	Soybeans, corn, beef
Argentina				Wheat, corn, sorghum, soybeans

Most data for 1982-84. South Africa, Sudan, and New Zealand not shown.

compared across countries and commodities," Ballenger continues. "They provide a way for countries to monitor and measure each other's policy changes. They also offer a possible framework for multilateral exchange of concessions on agricultural policies."

Ballenger is referring to trade talks now under way in Geneva under the auspices of the General Agreement on Tariffs and Trade (GATT), which governs about four-fifths of the world's trade. This is the eighth round of international trade negotiations held under GATT since its founding more than 40 years ago.

Negotiators are trying to widen GATT's coverage and reduce barriers to world trade. For instance, they are trying to deal with more recent trade obstacles that have emerged, including nontariff trade barriers and domestic farm subsidies that can

(continued on page 12)

Taking the Next Step

The Economic Research Service study of government intervention in agriculture represents only the first major step. In the months ahead, ERS economists will analyze how world production, consumption, and trade would respond to changes in producer and consumer subsidy equivalents.

This will allow them to evaluate the impact of possible GATT agreements to reduce government intervention in agriculture around the world.

They'll also be working to update their measures from the 1982-84 period covered by the study. "There have been key policy changes since then that could affect the PSE's, CSE's, and world trade markets," says ERS economist Nicole Ballenger.

In preparing new figures, she says, analysts are now focusing on the following events:

In the United States, passage of the Food Security Act of 1985 changed the level of assistance to producers. Of particular importance are the lower loan rates for wheat, rice, feed grains, and cotton, a dairy herd termination program, and enhanced export assistance. Target prices for grains were frozen, with reductions scheduled to begin in 1988 and later years.

"It is clear that direct payments to U.S. farmers (cash and in-kind) were markedly higher in 1986 than during 1982-84. With lowered loan rates and frozen target prices, the deficiency payments made to farmers rose significantly in 1986," she notes.

In the EC since 1984, says ERS economist Dale Leuck, "officials have attempted policy changes in the dairy and cereals sectors to reduce production and limit budget costs. But the effectiveness of these policy changes has been limited by implementation problems. Additionally, the sharp depreciation of the dollar and the decline in dollar-denominated world cereal prices dramatically increased the cost of the EC's Common Agricultural Policy during 1986. Those increased costs would be reflected in considerably higher PSE's."

Japan offers much the same story, according to fellow ERS economist Bill Coyle.

"Although there is increasing pressure from urban consumers and Japan's trading partners to reduce protection to agricultural producers," says Coyle, "Japan's agricultural policy goals have remained essentially unchanged since 1964."

Abundant rice harvests in 1985 and 1986 required large government outlays to rice producers, despite the fact that rice prices were frozen at 1984 levels. Lower world prices and the rapid appreciation of the yen against the dollar imply larger producer subsidy equivalents for rice and other commodities since 1984.

"Japanese producer wheat prices were lowered slightly for the first time in 27 years in 1986. Again, however, lower world wheat prices and the higher valued yen suggest that 1986 PSE's would be higher than the 1982-84 average," he says.

In Canada, levels of support to producers have increased or stayed the same since 1984. And in Australia, depressed world crop prices are resulting in larger subsidies to producers, say ERS analysts.

Australia's neighbor, New Zealand, though, has reduced government intervention in its agricultural sector since 1984. Subsidies and trade barriers are being phased out, other government involvement in the economy is being reduced, and user fees are being imposed for government services. Significant assistance to agriculture continued through 1985-86, but in 1987 and beyond assistance to agriculture will be greatly reduced, the analysts say.

Among the less developed countries, "the ability to buffer domestic agricultural producers or consumers from worsening world market conditions has been sharply curtailed by financial constraints," says economist Ballenger.

Less developed countries face considerable pressure from international lending institutions, including the World Bank and the International Monetary Fund, to liberalize agricultural trade and reduce government involvement in agriculture.

"In some cases, this has meant reducing disincentives to agricultural producers by lowering export taxes and devaluating exchange rates," says Ballenger. "For example, since 1984 Argentina has reduced export taxes, and Nigeria has sharply devalued its currency."

Questions Without Answers: How Much, How Soon Will Export Demand Respond?

Lower, more competitive prices are a key part of the 1985 farm bill strategy for reviving U.S. agricultural exports. The strategy has already reversed the erosion in the U.S. market share for several commodities, yet its ultimate success or failure may depend on some unanswered questions about a basic economic concept.

The concept is the "price elasticity of export demand"—put simply, how world export demand responds to a change in price.

At issue is not whether demand will increase if price is reduced. All other things being equal, demand will almost surely go up, according to economists Walter Gardiner and Praveen Dixit of USDA's Economic Research Service. The important questions are really "how much?" and "how soon?"

These are two of the questions recently investigated by Gardiner and Dixit. Their review of 44 export elasticity studies by economists in universities, government, and research institutions reveals just how complicated the questions are.

They found that the results of past studies varied widely according to the estimating methods used and the commodities and export markets analyzed. They also noted that researchers are handicapped by insufficient and inconsistent data, and that the responsiveness of export demand tends to change along with changing policies and economic conditions here and abroad.

Nevertheless, their review brings into sharper focus two questions with major implications for farm policy and agricultural exports.

How Much Is Enough?

It isn't enough to know that a lower price will have some positive impact on quantity, the economists explain. The mathematical relationship between price and quantity must be understood to determine whether the higher quantity justifies the lower price.

Two very simple illustrations may help.

If the price of a product is reduced 10 percent and the quantity sold rises only 5 percent, the seller is the loser. The higher sales volume does not offset the price cut, and the seller's overall earnings drop.

It isn't enough to know that a lower price will have some positive impact on quantity.

On the other hand, if price is reduced 10 percent and the quantity sold then climbs 20 percent, gross earnings are increased. In this case, the price reduction may have paid off, not in terms of profit perhaps, but at least in terms of total sales. A lower price (and profit) may be necessary to arrest an erosion in sales, to defend the seller's market share against competitors, to discourage new competition, or to stimulate expansion in the market by attracting customers who may be unable to afford the higher price.

Proportionality is built into the term "elasticity."

Inelastic demand describes a relationship where the percentage change in quantity is less than the percentage change in price, as illustrated by the first example above. In the second example, export demand is price elastic because the percentage drop in price results in a greater percentage increase in quantity.

Looking for Answers

The difficulty of determining the elasticity of demand for U.S. exports is mainly a result of the large number of factors involved and their shifting roles over time, say the two analysts.

Demand can be influenced by changes in population and incomes (buying power) abroad. It can be altered by shifts in foreign tastes, weather's impact on supplies from year to year, changes in currency exchange rates, and new technologies that affect production costs or favor one crop over another.

And this is just the beginning, Gardiner notes.

The response to lower U.S. prices will also depend on the extent to which agricultural and trade policies abroad "interfere" with the buy signals that lower prices might transmit given a perfectly free trade market.

He's talking not only about how competitors might respond through their prices and export subsidies, but also about the policies of importing nations. Tariffs, import quotas, restrictive import license requirements, and many other trade barriers can turn what might be an elastic demand into an inelastic demand. Policies such as government stockholding programs, production incentives, or fixed internal prices can also insulate markets and distort any demand response.

The list goes on, and it includes technical problems involving the data, as well as questions of how to interpret estimates once they're made.

Separating all the relevant factors, determining their respective roles, and predicting how they'll interact to affect the elasticity of demand for U.S. exports is a complex and inexact exercise, Gardiner says. Elasticities vary for each commodity and each market, and they change constantly over time with changing policies, economic conditions, and market shares.

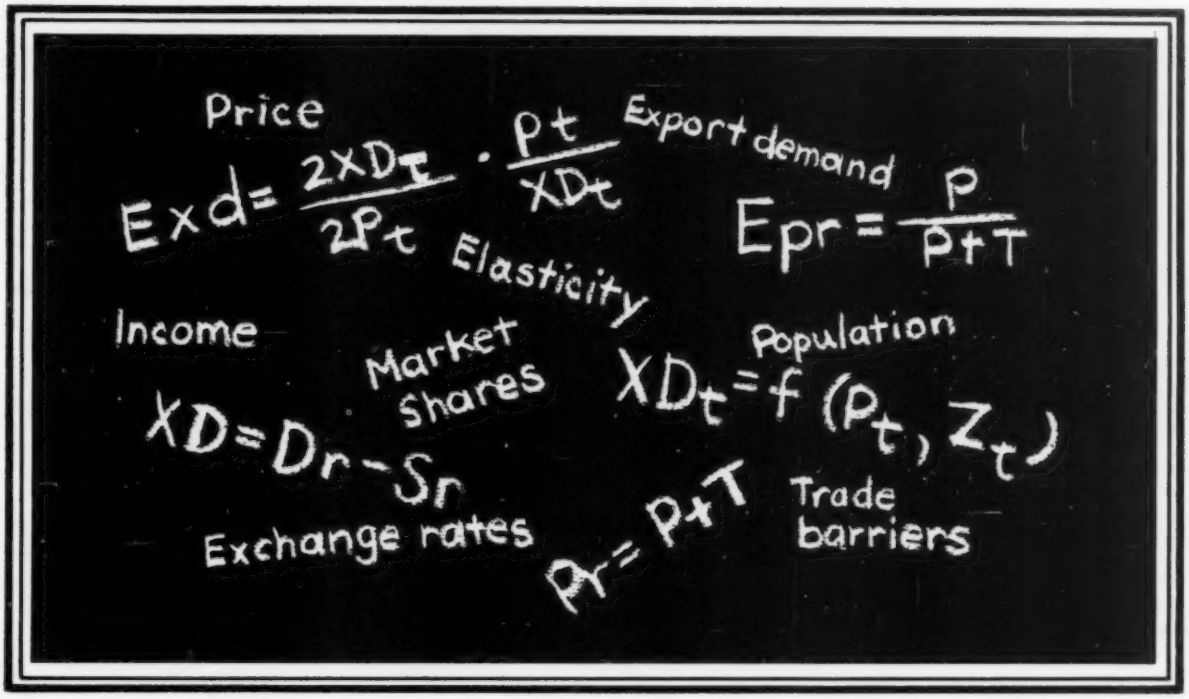
"It is a far more complicated matter than just measuring how demand reacted to price changes of the past," he says.

In the 44 studies Gardiner and Dixit reviewed, they found a wide variation in elasticity estimates. They attributed the variations primarily to differences in methods, assumptions, and periods of study.

Yet the weight of the evidence, they noted, did yield a few generalizations.

"In the short run, defined as a year or less, the evidence suggests that export demand for most U.S. commodities is inelastic," Gardiner says. "Sorghum may be an exception, and the evidence isn't conclusive either way for soybeans and soybean oil."

Is that bad news for the export strategy implicit in the 1985 farm bill? Not necessarily. Analysts did not expect a dramatic, overnight turnaround in U.S. agricultural exports after 6 straight years of volume declines.



The studies on the long-run elasticity of export demand were fewer and even less conclusive, but a number of them did find evidence that export demand seems to be price elastic over time.

Differences among these longer term studies still leave considerable doubt about the magnitude of the potential demand response. Nor do they satisfactorily address the second major question: How soon?

How Soon Is Soon Enough?

"The longer any price change persists, the greater the effect," Gardiner says. "In the long run, export demand is probably price elastic. The problem for economists is in defining what 'long run' means, and the problem for policymakers is in deciding how long we can wait."

Gardiner and Dixit offer several reasons why an export response to a price change might be delayed.

Many countries are locked into long-term trade agreements with certain suppliers. If they abide by those agreements, they may not be in a position to respond to a lower U.S. price until the pact expires.

Moreover, when prices fall, producers in exporting and importing nations are not likely to cut their production immediately. They may not be convinced the price reduction will last, or they may feel tied to particular commodities based on their management skills, the land or climate in their area, or their tools and equipment. They may even be totally insulated from the price change by their government's farm policies.

"The difficulties of short-run substitution and large investments in infrastructure would deter any quick withdrawal of producers from the sector. In addition, many countries have self-sufficiency goals and policies designed to maintain or increase production. The longer a price change is in effect, the greater the possibilities of policy changes and the substitution of products, output, and suppliers," says Dixit.

Time is required for foreign governments to develop and implement policy changes that send different production signals to farmers. Time is also required for the farmers to react to the lower prices or the new programs and to shift into other crops.

And before any of this happens, analysts say, foreign nations may have to be convinced that the United States has the staying power to stick with its new, aggressively competitive trade posture.

"We may find that there is no quick fix," Gardiner says. "In order to remain competitive on the world market, we may have to be patient and keep our prices down. We may have to be willing to pay out in the short run to achieve a greater market share and some market expansion in the long run."

Yet the longer prices have to be kept low to get an acceptable demand response, the higher the potential cost of U.S. government supports and the greater the temptation to change our policy, the analysts note.

"Clearly, we don't have the answers we need yet on how much and how soon exports can be expected to respond," Gardiner says.

"If there are some conclusions we can draw from our research, it is these," adds Dixit. "More work is needed on methods of estimating the elasticity of demand and the interpretation of results. Also, we now know that the elasticity estimates need to be continually updated because of their volatile nature. Finally, there is a strong need to refine and expand existing data sources on world commodities and the major trading countries."

In the months ahead, the elasticity question will be getting greater attention from the Economic Research Service and many universities. As part of this widely based research effort, a major symposium on the subject will be held this summer in Dearborn, Michigan, sponsored by the International Agricultural Trade Research Consortium. □

[Based on information provided by economists Walter Gardiner and Praveen Dixit of the Agriculture and Trade Analysis Division, Economic Research Service.]

AGRICULTURAL ROUNDUP

America's Plus: More Money Left After the Meals

How prosperously, or poorly, people live depends partly on how much of their income goes for one of life's necessities—food.

Based on this single measure, Americans enjoy the world's highest standard of living, says economist Penelope Korb, an analyst with USDA's Economic Research Service.

Her "glimpse of life" around the world shows that U.S. consumers retain an advantage they've held for at least a decade, and possibly much longer. On average, their food bills take a smaller share of their incomes than consumer food bills in any other nation.

Korb's country-by-country calculations of per capita disposable incomes and food-at-home expenditures put U.S. food spending at a modest 10.9 percent of income in 1983, the latest year for which comparable world data are available.

Immediately behind the United States was Canada, where consumers spent 12.3 percent of 1983 income on food. Following Canada was the Netherlands at 12.7 percent and the United Kingdom at 13.5 percent. Last on Korb's ranking of 25 nations was the Philippines. There, food bills took nearly half of income.

Lack of complete or consistent statistics kept many countries off her list. Some others, including the USSR and Eastern Europe, had to be examined separately because the available information wasn't comparable with the data used to compile the country rankings.

Soviet citizens, she says, apparently spent more than 30 percent of total household disposable income on food and beverages combined. In Poland, the figure was closer to 50 percent.

All her numbers, Korb cautions, refer only to spending for home consumption. If eating-out expenses were included, figures for the more affluent nations would rise several percentage points.

U.S. consumers, for example, spent around 5 percent of 1983 income on restaurant and other away-from-home meals and snacks, bringing total food expenditures to about 15 percent of income. However, Americans would probably retain their advantage in food spending if eating-out data were available to make similar

Large Acreage Cuts Reported

Grain and soybean producers will respond to this year's federal farm programs by sharply cutting their plantings for the second season in a row, according to USDA's March survey of farmers' 1987 planting intentions.

This year's acreage cuts are expected to be larger—in some cases, much larger—than those made last year, when corn plantings declined 8 percent, wheat seedings 5 percent, and soybean acreage 3 percent.

The U.S. grains-soybean sector is moving in the right direction, toward a better supply-demand balance, says economist Sam Evans of USDA's Economic Research Service. However, unless the weather turns ugly or demand picks up more quickly, Evans doesn't foresee any immediate prospect for significantly higher prices. There are still too many concerns about rising yields, large foreign production, and the huge stocks overhanging the market, he says.

In the March plantings survey, farmers reported the following acreage plans:

- 1987 corn plantings of 67.6 million acres, down 9 million acres (12 percent) from last year to the lowest level since 1983—the year when farmers responded to the PIK program by planting the fewest acres in corn since the 1870's. Of 47 reporting states, 41 indicated prospective acreage declines.
- including winter wheat planted last fall, a total of around 65 million acres seeded to 1987 wheat. That's down about 7 million acres (10 percent) from 1986 and the smallest wheat acreage since 1973. Among the 15 major wheat-producing states, Ohio indicated a decline of 26 percent, and Oregon, Minnesota, Washington, and Idaho reported declines of 18 percent or more.
- soybean plantings at less than 57 million acres, down 4.6 million (7 percent) from last year and the smallest acreage since 1976. The largest reported declines were in the South.
- sorghum acreage down 23 percent, barley down 16 percent, and rice down 3 percent.
- acreage in oats up 7 percent and durum wheat acreage up 5 percent.

Increases were also planned for some nongrain crops, including cotton.

If these early plans prove accurate, the total combined acreage in feed grains, wheat, rice, and soybeans would decline to 230 million, down 10 percent or 25 million acres from 1986. Compared with 2 years ago, plantings of these crops would be down about 40 million acres.

A firm fix on actual plantings won't be available until July 9, when USDA's Agricultural Statistics Board publishes the results of its June acreage survey, says Evans. "On balance, though, the intentions of the last few years have provided

Total Grain and Soybean Acreage Would Drop About 10% Based on 1987 Planting Intentions

	1986 planted acreage	1987 planting intentions[1]	Change, 1986 to 1987
	thousands of acres		*percent*
Grains & soybeans			
Corn	76,674	67,556	−12%
Sorghum	15,321	11,844	−23%
Oats	14,708	15,673	+7%
Barley	13,059	11,031	−16%
All wheat	72,033	64,847	−10%
Winter	53,930	48,195	−11%
Durum	2,994	3,137	+5%
Other spring	15,109	13,515	−11%
Rice	2,401	2,319	−3%
Soybeans	61,480	56,885	−7%
Total	255,676	230,155	−10%
Other crops			
All cotton	10,064	10,354	+3%
Hay[2]	62,274	61,154	−2%
Peanuts	1,567	1,606	+2%
Sunflower	2,025	1,675	−17%
Flaxseed	720	590	−18%
Dry edible beans	1,674	1,839	+10%
Tobacco[2]	597	608	+2%

[1]Based on voluntary responses collected in the first half of March from more than 70,000 farmers and ranchers. [2]Area harvested.

In many of the world's poorer nations, more than half the average person's income may go for food.

adjustments for other nations.

Another important point about her calculations, says Korb, is this: Food prices, quantities and types of foods consumed, and income levels all play a role in the percentages. In other words, the percentages of income spent on food don't measure whether food prices are high or low in any particular country—nor do they simply reflect income levels.

U.S. consumers, for instance, spent the smallest share of income on food, but the United States (at $9,935 per capita) only ranked second in disposable income. The Swiss had the highest incomes per person ($10,724), yet more of the paycheck went for food in Switzerland than in eight other nations on the list.

The United States does not have the world's lowest food prices or the world's highest per capita income, Korb concludes. But, as a group, Americans eat as well as or better than consumers in any other nation on earth—and they do it for a smaller portion of their incomes, leaving them more to spend on life's other necessities, and comforts.

a fairly good indication of how acreage would turn out," he adds.

The large acreage reductions should result in significantly smaller harvests of feed grains and soybeans, even with very good yields, Evans speculates.

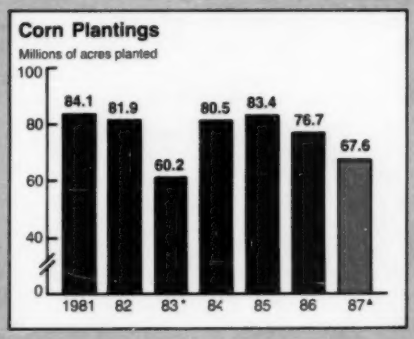
For wheat, the story could be different. Last year's average yield of 34.4 bushels an acre was 13 percent below the 1983 record of 39.4 bushels. In other words, good weather and high yields could possibly offset even a 10-percent reduction in acreage. Given the wheat stocks that will be carried into the new season, a large harvest could mean another year with a U.S. wheat supply of around 4 billion bushels.

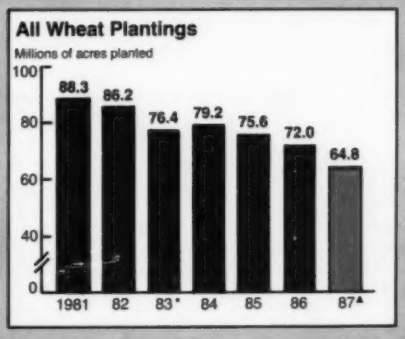
Whether next year's supplies will be smaller is also an open question for corn. Evans says the 1987/88 supply could be even larger than this season's, despite a sharp decline in corn plantings and production prospects. It depends on the amount of corn carried into the new season.

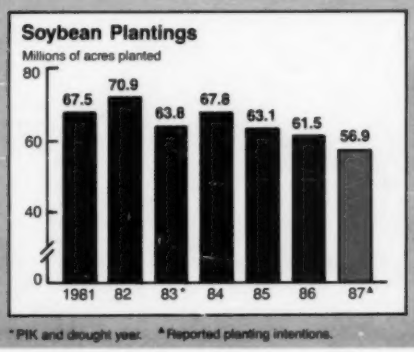
Mid-April projections from USDA's World Agricultural Outlook Board indicated that 5.2 billion bushels of corn could be left over at the end of the current season. If so, the 1987/88 season would begin with record corn stocks—enough, in fact, to satisfy nearly a year's worth of domestic demand before the first bushel of the new season is harvested.

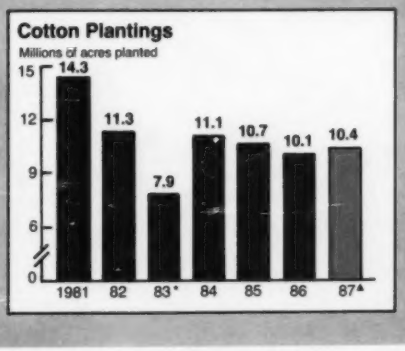
It's almost the reverse situation for cotton. With good weather, larger plantings would bring a bigger harvest, but sharp reductions in stocks this year are expected to result in a much smaller supply for next season.

Next year's supply of soybeans could be either up or down, depending on yields this fall and stocks at the end of the current season. If farmers follow through on their acreage intentions and if yields are on trend, the likelihood is that the supply will be down some, Evans says.









*PIK and drought year. ▲Reported planting intentions.

Food Takes the Smallest Bite Out of America's Income[1]

	Percent of 1983 income spent on food
United States	10.9
Canada	12.3
Netherlands	12.7
United Kingdom	13.5
Australia	14.0
France	15.7
Belgium	15.9
Austria	17.2
Switzerland	17.5
Sweden	18.1
Finland	18.7
Norway	19.0
Japan[2]	19.5
West Germany	20.0
Italy[3]	21.3
Portugal[4]	23.7
South Africa[3]	24.4
Malta[3]	25.9
Spain[4]	26.5
Colombia[4]	28.5
Greece	29.9
Thailand[3]	34.9
Korea[3]	37.5
Honduras[3]	42.5
Philippines[3]	46.7

[1]Disposable personal incomes were calculated by the Economic Research Service. Food-at-home expenditure data were obtained from OECD and U.N. publications. [2]Includes spending on beverages and tobacco. [3]1982 data. [4] 1981 data.

Why the Cattle Cycle Went Awry

Since the late 1800's, cattle cycles *had been* nearly as regular as the passing of the decades.

A typical cycle began near the end of one decade with a rise in U.S. cattle numbers. Numbers peaked toward the middle of the next decade—setting a new all-time high. Then numbers declined for a few years until another herd rebuilding got under way. Each upswing, however, started with a higher cattle inventory than the preceding one.

The cycle that broke the mold was not dramatically unlike previous cycles. It took off in the late 1960's and reached a peak in 1975 when USDA counted a record 132 million cattle and calves on American farms. What made it different from previous cycles was the unprecedented herd expansion and the record decline that followed.

Ever since then, the industry has been unable to sustain the biologically based cyclical increases analysts had come to expect. This year started with only 102 million cattle, the smallest U.S. herd in 25 years. And, according to economist Ron Gustafson, a cattle analyst with USDA's Economic Research Service, a typical cycle, with a prolonged herd expansion, is unlikely to begin before the mid-1990's.

Neither the current cycle, which started in 1980, nor the preceding one of 1967-79 followed the pattern set in previous years, says Gustafson. But the real deviation occurred during the enormous and unprecedented fluctuations of 1967-79, he contends.

That cycle—the eighth since 1896—began with 109 million head. The next 12 years brought the largest buildup and sharpest decline in cattle numbers ever recorded.

Expanding Herds

In the expansion phase between 1967 and 1975, 23 million head were added to the U.S. cattle inventory. The tremendous growth occurred for several reasons, says Gustafson. Forage was increasingly plentiful as large tracts of fertile cropland were returned to pasture during those years. Grazing acreage was further enhanced as producers, particularly in the Southeast, increased their applications of low-priced fertilizers. This strengthened grass stands and allowed pastures to support more animals per acre.

A typical cycle, with a prolonged herd expansion, is unlikely to begin before the mid-1990's.

At the same time, rising consumer incomes and low inflation spurred demand for beef during the early part of the cycle. The growing demand, combined with the low-priced grain supplies, encouraged producers to place more cattle in feedlots.

The favorable conditions, however, did not last.

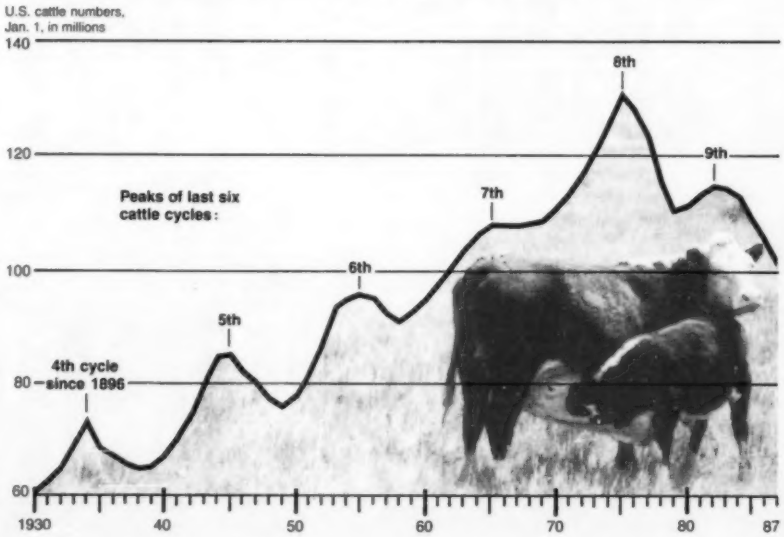
The first hint of trouble came a few years into the cycle when blight damaged the 1970 corn crop, ushering in several years of rising feed costs. Despite large harvests, grain prices continued to rise in 1971 and 1972 because of increased grain exports—primarily to the Soviet Union. Livestock production costs were driven up further when the 1973 oil embargo raised prices for fertilizers and farm fuels.

Higher costs toward the middle of the 1967-79 cycle were joined by other factors detrimental to beef producers. Poultry, for example, began to compete more aggressively. In the late 1970's, as beef supplies declined and retail prices rose, inflation started cutting into consumer spending power. Americans turned more toward cheaper meats to hold down their grocery bills. U.S. consumption of poultry, which totaled 45 pounds per capita in 1967, rose to 61 pounds by 1979.

Beef consumption, on the other hand, climbed from 79 pounds of retail cuts per person in 1967 to a record 94 pounds in 1976, but then dropped to 78 pounds by 1979. "The record 94 pounds was an aberration—a direct result of the sharp herd liquidation that occurred at that time," says Gustafson.

As grain farming became more profitable in the mid-1970's, land that had been in pas-

Cattle Cycles Followed a Predictable Path—Until the Eighth Cycle



The large liquidation at the end of the 1967-79 cycle drastically cut the base for future beef production and growth.

ture moved back to crops, reducing the amount of forage for beef herds, Gustafson says. Pork and poultry producers, who are not dependent on roughages, were in a better position to increase production by taking advantage of growing feed grain supplies.

The 1967-79 cycle peaked at 132 million head of cattle in 1975 and then plunged, falling 16 percent or 21 million head in 4 years.

This large liquidation drastically cut the base for future beef production and growth, says Gustafson. The cow herd declined 18 percent and the number of heifers available for breeding fell nearly 38 percent.

Stalled Expansion

The most recent expansion began with 110.8 million head of cattle in 1979. That figure rose to 115.4 million head by 1982 and then stalled. By January 1983, the total cattle inventory slipped to 115.0 million head, and beef cow numbers dropped to 37.9 million, down more than a million head from 1982.

The decline continued as cattle producers, feeling the pressures of the faltering agricultural economy, sent heifers to feedlots and cows to slaughter, Gustafson says. The increased animal slaughter was compounded by an extended drought in the Central and Southern Plains between 1982 and 1984, as well as shorter periods of dry weather in other areas. On January 1, 1987, the U.S. cattle herd slumped to 102.0 million head, the lowest number since 1962.

Where is the cycle headed now? It's probably moving toward several years of slow growth and reduced fluctuations, says Gustafson. He points out that the beef cow herd numbered 33.9 million in January—a slight increase from the previous year, breaking a steady 4-year decline. This could indicate something of a turnaround for the industry. (However, rather than a nationwide jump in beef cow numbers, most of the increase was seen in the drought-stricken Central and Southern Plains.) In addition, producers did not cull their herds as much in 1986—beef cow slaughter was down 25 percent from 1985 levels, Gustafson says.

But a strong upturn is not expected.

Instead, the industry will probably see a stabilization of the beef herd in 1988. Beef producers are still faced with record total meat supplies because of growing poultry and pork production. The large supplies of competing meats at the grocery store will have a depressing effect on the price of beef. Lower production costs, however, should help the industry compete, Gustafson says.

Ripple Effects

Any future expansions in the beef herd will be much slower than in the past, partially because of the impact of the financial crisis on the sector. "For many producers, the 'opportunity cost' of retaining more heifers versus selling them and paying down debt is too great," Gustafson explains. "Many producers, especially those who raised cattle as a second source of income, were forced to cut or liquidate their herds in order to pay off some of their debts."

Many of those who got out of the cow-calf business since the late 1970's are probably out of the business for good, Gustafson adds.

The differences in the current cycle, though, are not entirely the result of financial hardships facing farmers. Meat supplies are expected to continue their annual, record-hitting trend, setting new highs in 1987 and 1988. "This means the large, total U.S. meat supply will hold down retail prices and, consequently, gains at the farm level for beef," says Gustafson.

"What we are seeing now are ripple effects from the events that occurred in the 1970's. It is very likely the ripples will continue to affect production for several years to come. One of the reasons is that pork and poultry producers have already established a strong base for future production. That, combined with their shorter biological cycles, has allowed them to expand before the beef sector has had time to react," he says.

"Beef production probably will enter a holding period as cow numbers stabilize. The holding phase will likely continue until the farm economy strengthens and we see per capita meat supplies decline. This will occur as the U.S. population increases and essentially catches up with the ability of the pork and poultry industries to produce record supplies of meat," Gusafson says.

"As a result, it may be 8 to 10 years before the normal biological production curve of past cattle cycles will kick in and 'overpower' the impact of huge supplies, financial stress, and drought that skewed the last two cycles," he says. □

[Based primarily on information provided by economist Ron Gustafson of the Commodity Economics Division, Economic Research Service.]

How Cycles Work

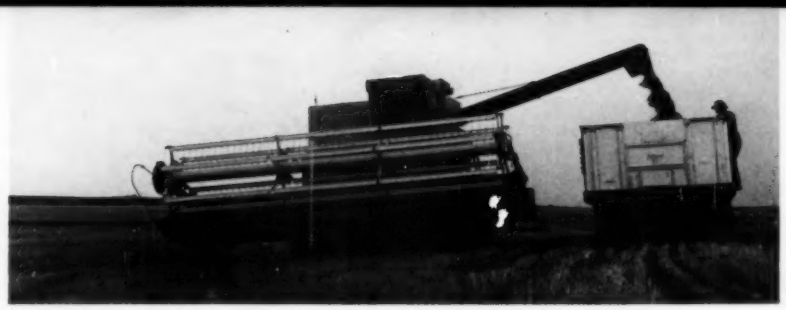
New cycles usually begin at the end of prolonged herd liquidations when producers—responding to economic incentives such as better cattle prices or lower feed prices—rebuild their herds by holding back female animals from slaughter.

Typically, the expansion lasts 5 to 6 years. The contraction is usually shorter, primarily because it is easier to reduce herds by sending more animals to slaughter than it is to build them up. For example, producers who want to enlarge their herds must wait nearly 3 years from the time a heifer is bred until its calf is old enough to enter the breeding herd.

This inherent biological constraint is what gave past cycles their pattern.

In addition, producers tend to wait to expand their herds until beef becomes more profitable. By the time new females added to herds during an upswing produce marketable cattle, prices may be moving in the opposite direction. As a result, expansions can continue after price and production incentives begin to dissipate.

"U.S. officials view trade liberalization as a means of gaining increased foreign market access for efficient U.S. producers . . ."



Government's Role
(continued from page 5)

hinder the free flow of trade.

U.S. trade officials say they will propose that objective measures of government intervention, like the PSE's, be introduced into the GATT negotiations.

In mid-May, at a meeting of the Organization for Economic Cooperation and Development, ministers of 24 industrialized nations called on governments to reduce assistance to agriculture. They also approved a report using the PSE and CSE statistical method of measuring and comparing the costs of farm subsidies in different countries.

As expected, though, the ERS research does not put the United States completely in the clear. In fact, there are few "innocents" in the community of nations. All the governments studied intervene to some extent.

This means that all nations may have to make some adjustments in order to reduce trade barriers, say analysts.

In the United States, trade liberalization could bring increased competition for U.S producers of imported products such as dairy, sugar, peanuts, and tobacco. At the same time, consumers of these products would probably benefit from increased supplies and lower prices.

Even so, the U.S. position appears to be firmly for reducing trade restrictions.

"U.S. officials view trade liberalization as a means of gaining increased foreign market access for efficient U.S. producers and cutting competition faced by U.S. suppliers from subsidizing exporting countries," Ballenger says. "U.S. taxpayers would be expected to benefit from freer trade as government costs of farm programs are reduced." □

[*Based on information provided by economists Nicole Ballenger, Barbara Chattin, Bill Coyle, and Dale Leuck, all of the Agriculture and Trade Analysis Division, Economic Research Service.*]

What Counts as Intervention?

Producer and consumer subsidy equivalents, PSE's and CSE's, provide a common measure for many different types of government intervention.

Certainly, direct subsidies or deficiency payments are one obvious kind of involvement in the farm sector. But such supports are joined by a host of other programs and policies. These other transfers often do not involve budget outlays for support and subsidy payments.

Broadly speaking, "PSE's indicate the net transfer from taxpayers and consumers into the farm sector," says ERS economist Barbara Chattin.

"Some policies, such as tariffs, import quotas, and variable levies, permit producers to receive prices higher than the prevailing world market prices," says Chattin. "Consumers bear the costs of these policies because they must then pay prices that exceed world market levels. Yet this 'tax' on consumers, along with the support received by producers, does not appear in the government budget."

PSE's, then, are the bottom line of the effects of many types of government policies—which are not always positive or favorable for the farm sector. In some cases, taxes on producers result in negative PSE's for the farm sector. Consumer subsidy equivalents can also be positive or negative.

"PSE's and CSE's show the relative importance of government policy in different countries and commodity markets in terms of its contribution to farmer revenues and consumer costs," says Chattin. "When examined over time, they show changing levels of government involvement in agriculture."

The ERS research incorporates most of the major government policies that directly affect agricultural production, consumption, and trade. Here are the six major categories of intervention that were defined and included:

- Market price supports, including such measures as quotas, tariffs, levies, government-held inventories, marketing board price stabilization policies (such as those of the Canadian Wheat Board), and state trading operations, as when a government itself becomes the buyer and seller.
- Direct income support including deficiency, disaster, storage, and acreage diversion payments.
- Programs affecting variable costs of production, such as subsidies for fertilizer and irrigation, as well as fuel tax exemptions and subsidized crop insurance.
- Programs affecting marketing of commodities, like transportation subsidies, marketing and promotion programs, and inspection services.
- Programs affecting long-term agricultural production, including research and extension services, and conservation and environmental programs.
- Controlled exchange rates, including all the ways in which a government artificially alters the value of its currency.

Current estimates, however, exclude several important programs known to affect the agricultural sector. Among the agricultural policies not covered: national policies of European Community members, and state or provincial policies of non-EC countries; tax policies which are differentiated by sector of the economy; forgone income from policies that control supply, such as uncompensated acreage reduction programs in the United States and dairy production quotas in the EC and Canada.

REPORTS IN THE NEWS

Agriculture—From Alabama to Wyoming

In Alabama, the average age of farmers is listed at 51.8, about a year older than the U.S. average. Alaska's farmers, by contrast, average only 46.8 years old.

Slightly more than 10 percent of Arizona's farms cover 2,000 acres or more, and these large farms account for around 91 percent of all the state's land in farms.

California, the nation's most populous state, is also the leading state in cash receipts from agriculture. Of its five top-grossing commodities, it holds a first or second place ranking among states in grapes, greenhouse-nursery products, dairy products, and cotton.

Florida has less than 2 percent of the nation's farms, and its typical farm has fewer acres than the U.S. average. Nevertheless, the state ranks among the top 10 states in total cash receipts from farming.

Illinois farmers saw the value of their farm assets decline from $73 billion in 1981 to about $47 billion in 1985, while their overall farm debt rose by nearly a billion dollars.

Minnesota's farmers received $480 million in direct government payments in 1985, up from $79 million in 1981 but down from $612 million in 1983 and $530 million in 1984.

Farmers in South Dakota experienced only a modest increase in cash receipts between 1981 and 1985. Over the same period, they saw the total equity in their farm operations drop from $17.2 billion to $10.9 billion.

This bulletin provides key agricultural statistics for all 50 states, as well as comparable national data. For each state, it shows the number of farms, farmland acreage, the average age of farmers, major commodities produced, cash receipts and expenses, government payments, farm debts and assets, and much more.

U.S.-State Agricultural Data *by Letricia Womack and Larry Traub. (Published April 1987; 103 pages of state data; GPO Stock number 001-019-00513-1; $4.75.)*

When Farmland Sold for $3 an Acre

In Madison County, Iowa, the average value of farmland, including any buildings, was $3 an acre. In Sutter County, California, you could buy farmland for around $8 an acre.

And in Fairfield County, Connecticut, land was going for a steep $49 an acre (not so surprising, perhaps, because the state had been settled early as one of the original 13 American colonies).

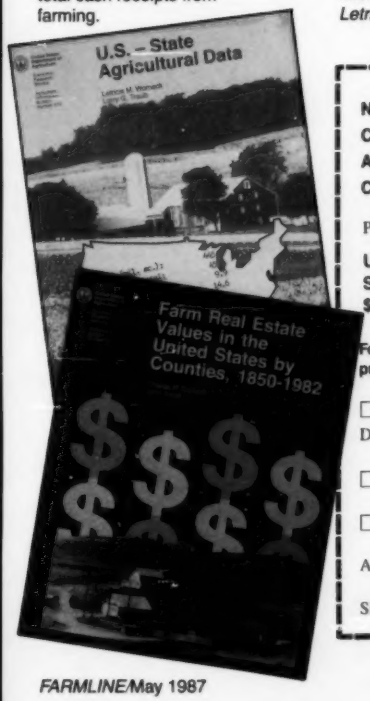
All these figures, of course, go back a few years—back, in fact, to 1850. By 1982, Madison County farmland was worth around $1,138 an acre, Sutter County farmland was valued at $2,985 an acre, and farmland in Fairfield County would fetch close to $9,000 an acre.

This report provides farmland values, where available, from 1850 to 1982 for every county in every state except Alaska and Hawaii. The data are from 21 agricultural censuses that were conducted over that period.

The economists who compiled the information caution that the definitions and data collection procedures changed from one census to another. In other words, the figures from one census aren't necessarily comparable in all respects to figures from another.

Nevertheless, they note that the information "presented in this report is unique." It draws on the only source of nationwide data on county farmland values, and it should be useful, they maintain, "for agricultural historians, land market analysts, and others who desire a long-term perspective on the values of U.S. farm real estate."

Farm Real Estate Values in the United States by Counties, 1850-1982 *by Charles Barnard and John Jones. (Published March 1987; 111 pages of county data by state; GPO Stock No. 001-019-00510-6; $5.50.)*



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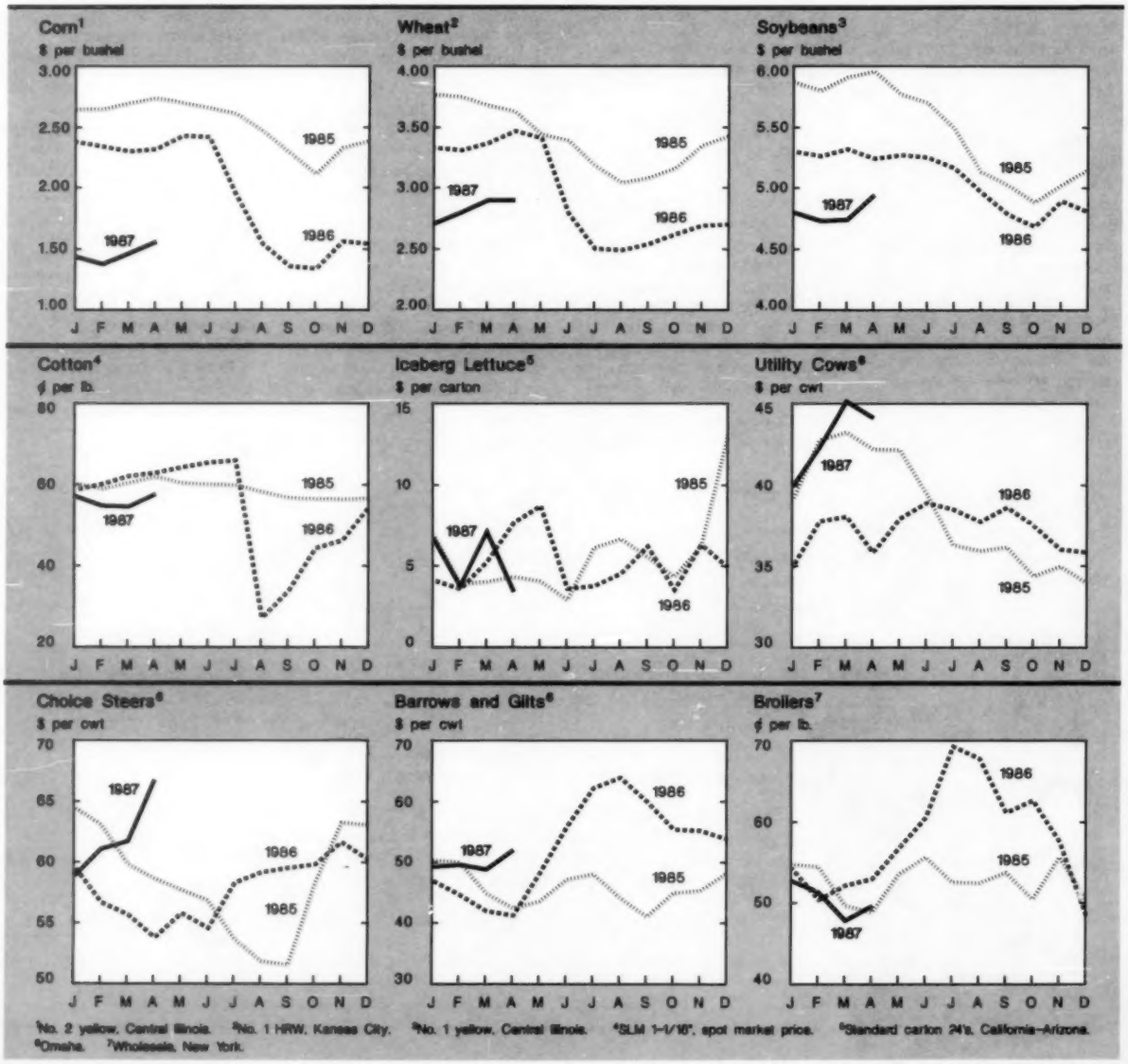
FARMLINE TRENDS

Monthly Price Monitor

USDA's April index of farm prices increased 1.6% from March and was 3.3% above its year-earlier level. Corn rose to $1.56 per bushel, its highest price since July 1986. Wheat held steady at $2.90. Soybeans jumped 20¢ to $4.94 per bushel, the highest price since last August, and cotton climbed to 57.7¢ per lb., the highest since last July. In the meat animals area, utility cow prices dropped only a dollar from March's $45 high. Choice steers rose $5 per cwt to $66.73, the highest monthly price in 3 years. Barrows and gilts gained about $3 to $51.97, and broilers rebounded to 49.6¢ per lb. Crop prices remained generally below year-earlier levels, while cattle and hogs were selling at higher prices. All prices shown are monthly averages.



[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California–Arizona. [6]Omaha. [7]Wholesale, New York.

Leading Export States

Value of Fiscal 1986 Agricultural Exports[1]

	1st	2nd	3rd	4th	5th	6th	7th	8th
	in millions of dollars (000,000)							
All ag products[2]								
Fiscal 1986 exports U.S. total: $26.3 billion	California $2,409	Illinois $2,153	Iowa $2,059	Kansas $1,539	Nebraska $1,504	Texas $1,450	Minnesota $1,269	Indiana $1,094
Fiscal 1985 exports U.S. total: $31.2 billion	California $2,702	Iowa $2,472	Illinois $2,341	Texas $2,032	Nebraska $1,754	Kansas $1,719	Minnesota $1,649	North Dakota $1,321
Fiscal 1984 exports U.S. total: $38.0 billion	Iowa $3,284	Illinois $2,930	California $2,789	Texas $2,575	Kansas $2,221	Nebraska $2,172	Minnesota $2,085	North Dakota $1,808
Major Commodities Fiscal 1986 exports								
Soybeans & products U.S. total: $5.6 billion	Illinois $1,016	Iowa $822	Indiana $492	Missouri $479	Ohio $426	Minnesota $425	Arkansas $260	Nebraska $226
Feed grains & products U.S. total: $4.7 billion	Iowa $889	Illinois $814	Nebraska $564	Indiana $394	Minnesota $389	Ohio $267	Kansas $208	Missouri $192
Wheat & products U.S. total: $3.5 billion	North Dakota $678	Kansas $643	Texas $284	Oklahoma $245	Colorado $204	Minnesota $153	South Dakota $142	Nebraska $133
Hides & skins U.S. total: $1.5 billion	Kansas $234	Texas $215	Nebraska $214	Iowa $76	Colorado $64	California $61	Wisconsin $53	Illinois $48
Live animals & meat[3] U.S. total: $1.4 billion	Kansas $171	Texas $169	Kentucky $166	Nebraska $164	Iowa $92	California $55	Colorado $52	Illinois $47
Unmanufactured tobacco U.S. total: $1.3 billion	North Carolina $611	Kentucky $245	South Carolina $110	Virginia $95	Georgia $92	Tennessee $74	Connecticut $24	Florida $18
Fruits & preparations U.S. total: $1.2 billion	California $739	Florida $223	Washington $71	Arizona $46	Michigan $34	Oregon $33	Hawaii $20	New York $16
Vegetables & preparations U.S. total: $1.0 billion	California $416	Washington $115	Michigan $58	Wisconsin $54	Idaho $52	Minnesota $44	Oregon $42	Florida $29
Cotton & linters U.S. total: $692 million	Texas $203	California $160	Mississippi $85	Arizona $53	Louisiana $38	Arkansas $36	Alabama $28	Tennessee $22
Rice U.S. total: $648 million	Arkansas $296	Texas $102	Louisiana $96	California $77	Mississippi $57	Missouri $19	—	—
Feeds & fodders U.S. total: $555 million	Iowa $55	Florida $48	Minnesota $48	Illinois $46	Nebraska $46	California $31	North Dakota $26	Texas $26

[1]State origins of exports are not monitored as products move into export channels. The above statistics are estimates based primarily on each state's contribution to U.S. production or marketings of individual commodities during fiscal 1986 (Oct. 1, 1985-Sept. 30, 1986). Stock levels within states, estimates of how much feed goes to livestock, and other available data are used to adjust these figures. [2]Includes commodities not listed in this table. [3]Includes breed and race horses, excludes poultry.

Data were provided by economist Steve Milmoe of the Agriculture and Trade Analysis Division, Economic Research Service.

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